

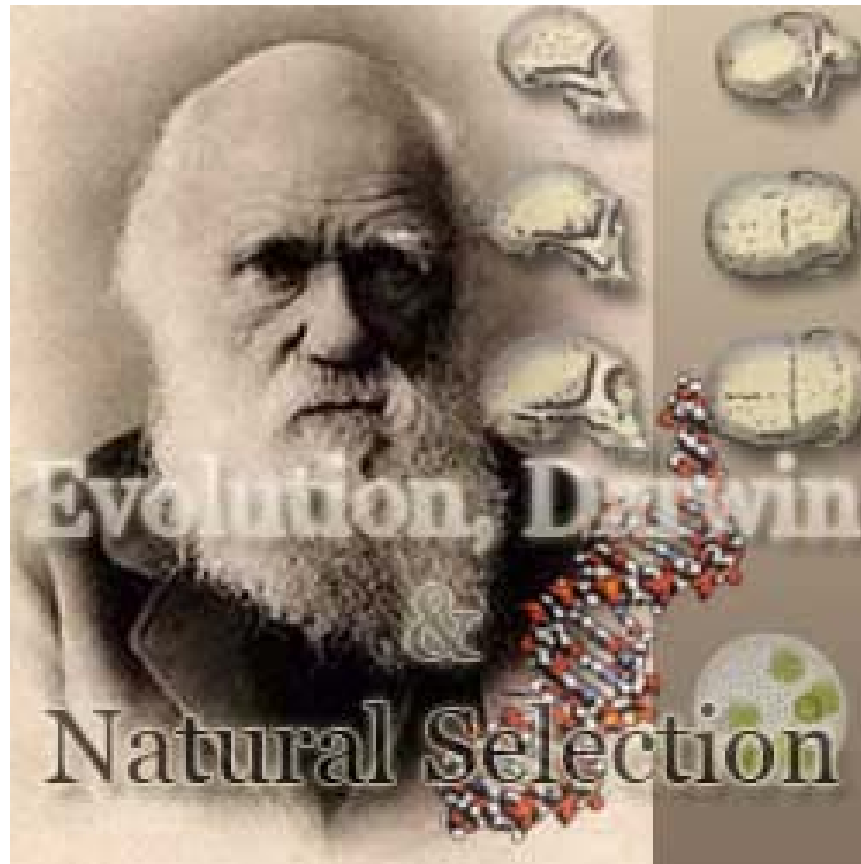
# Evolution Review Game

- Answer each question by writing your answers on a piece of paper. I will give about 30 seconds for you to discuss each question with your partners. When all the questions have been answered, we will exchange our answers. The group with the most correct answers **WINS!**

1 of 23: What is the term for a group of organisms that can reproduce and have fertile offspring?



2 of 23: As explained in the theory of evolution  
by natural selection, organisms with  
adaptations are more likely to survive and  
\_\_\_\_\_.



3 of 23: Darwin noticed that finches had different kinds of beaks in areas with different food sources. What term best explains this?



(a)



(b)



(c)



(d)

4 of 23: The Galapagos tortoises with short necks and legs lived in areas of low vegetation, while the tortoises with long necks and legs lived in areas with tall vegetation. This is an example of...



What's up?

# 5 of 23: What are the 4 factors that led to natural selection?

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

6 of 23: Evidence for evolution in Darwin's time came from several sources. Name and explain **one** of the four evidences.





7 of 23) When do these different species look most similar? What type of evidence is this?

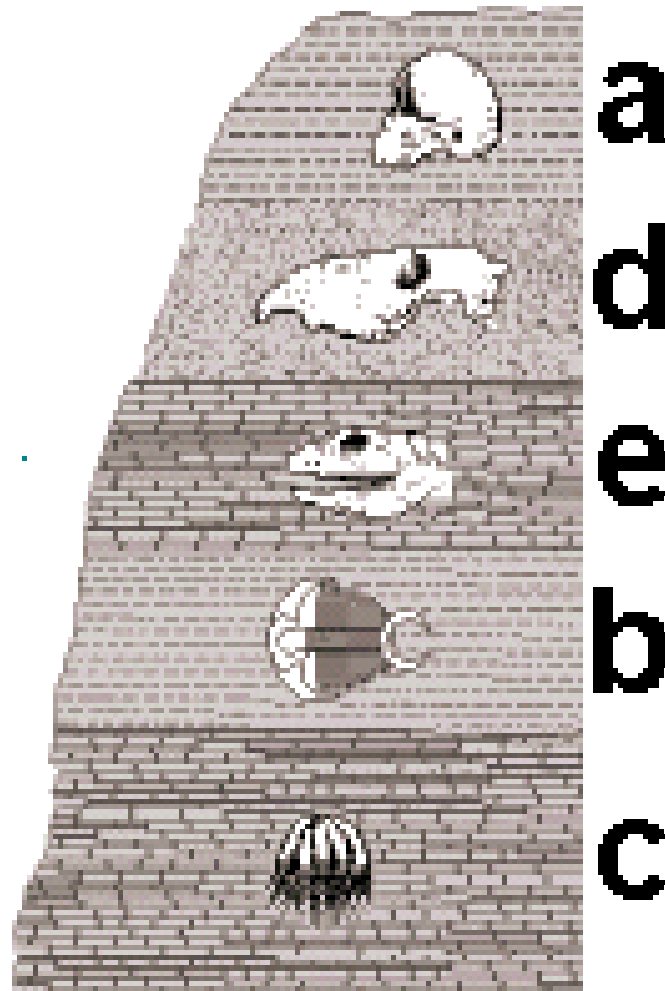


可愛的小豬 (藍眼睛、杜洛克、約克夏) A curious threesome (Landrace, Duroc, Yorkshire)

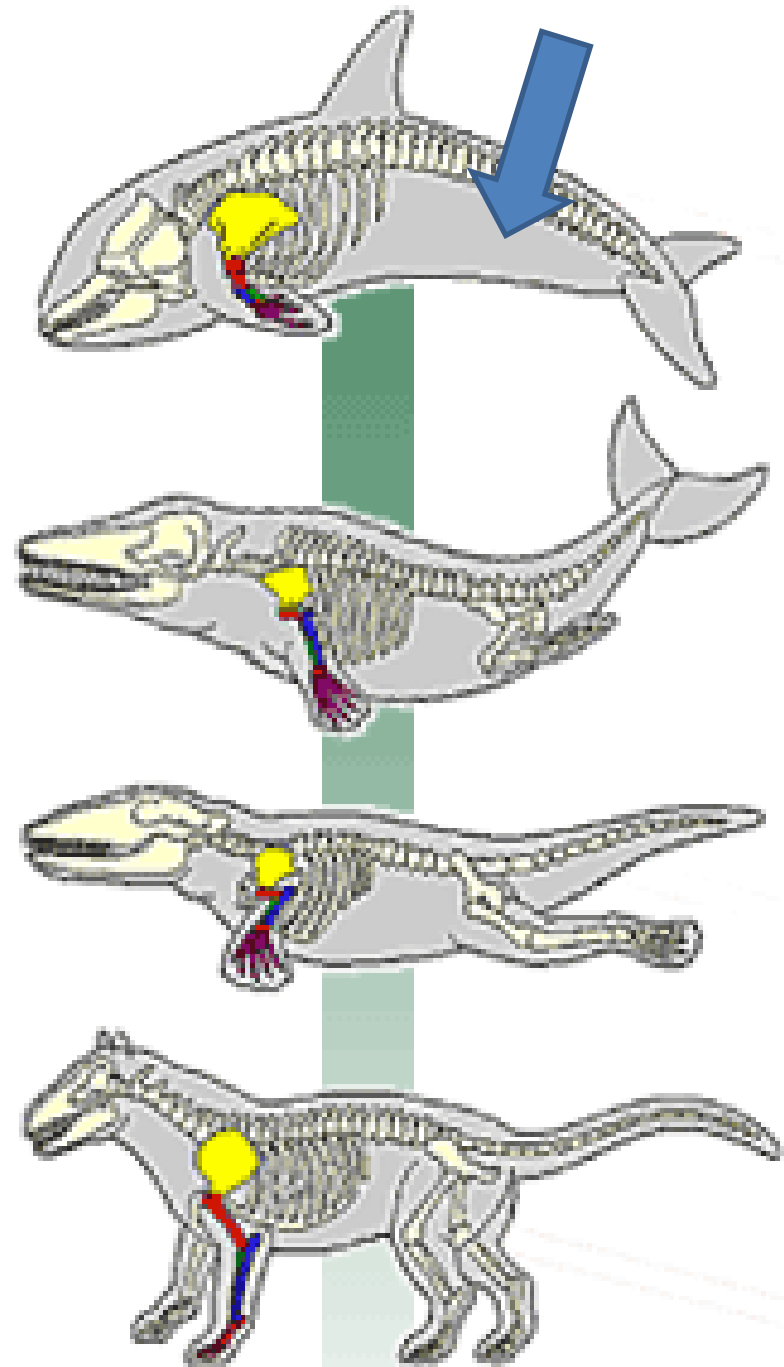
攝影/翁紀雄 Photo/ Chi-Hsiung Ni



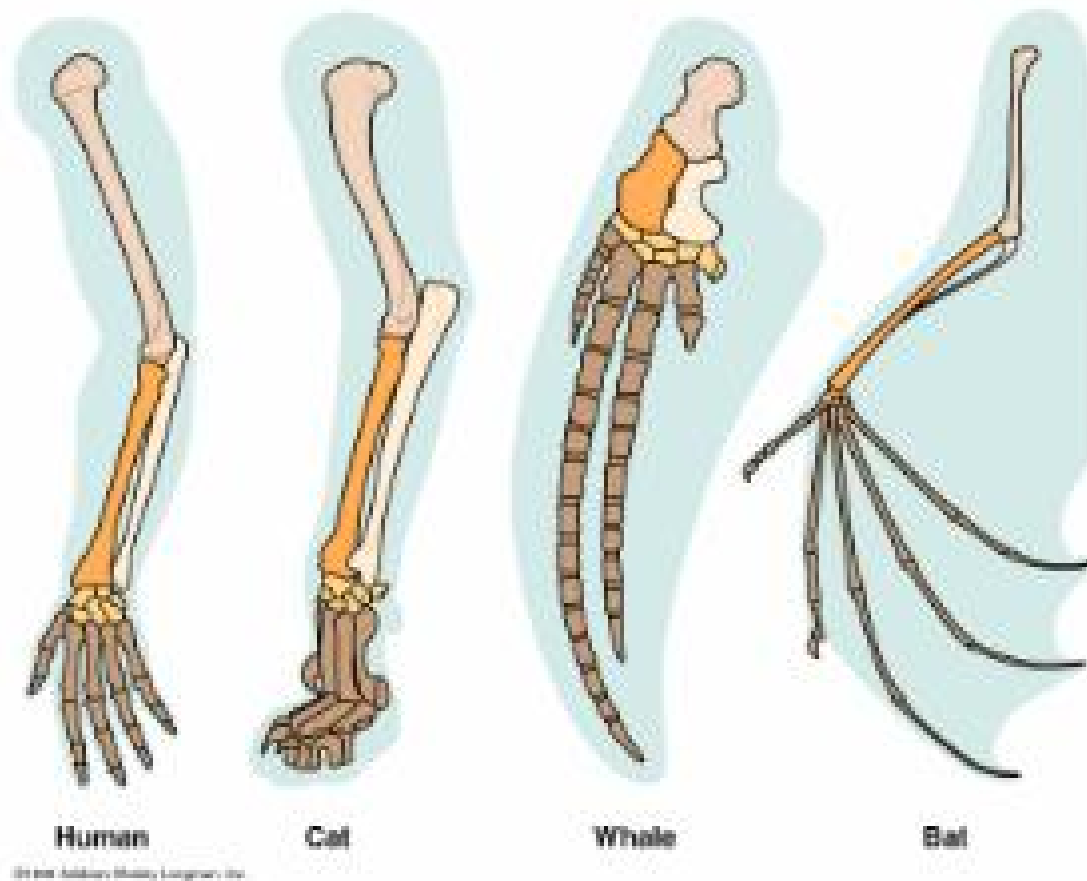
8 of 23) Place the fossils in order of oldest to youngest.



9 of 23) The top picture is showing what type of structures? What is another(different) example of this?



10 of 23: These are examples of  
\_\_\_\_\_ structures.



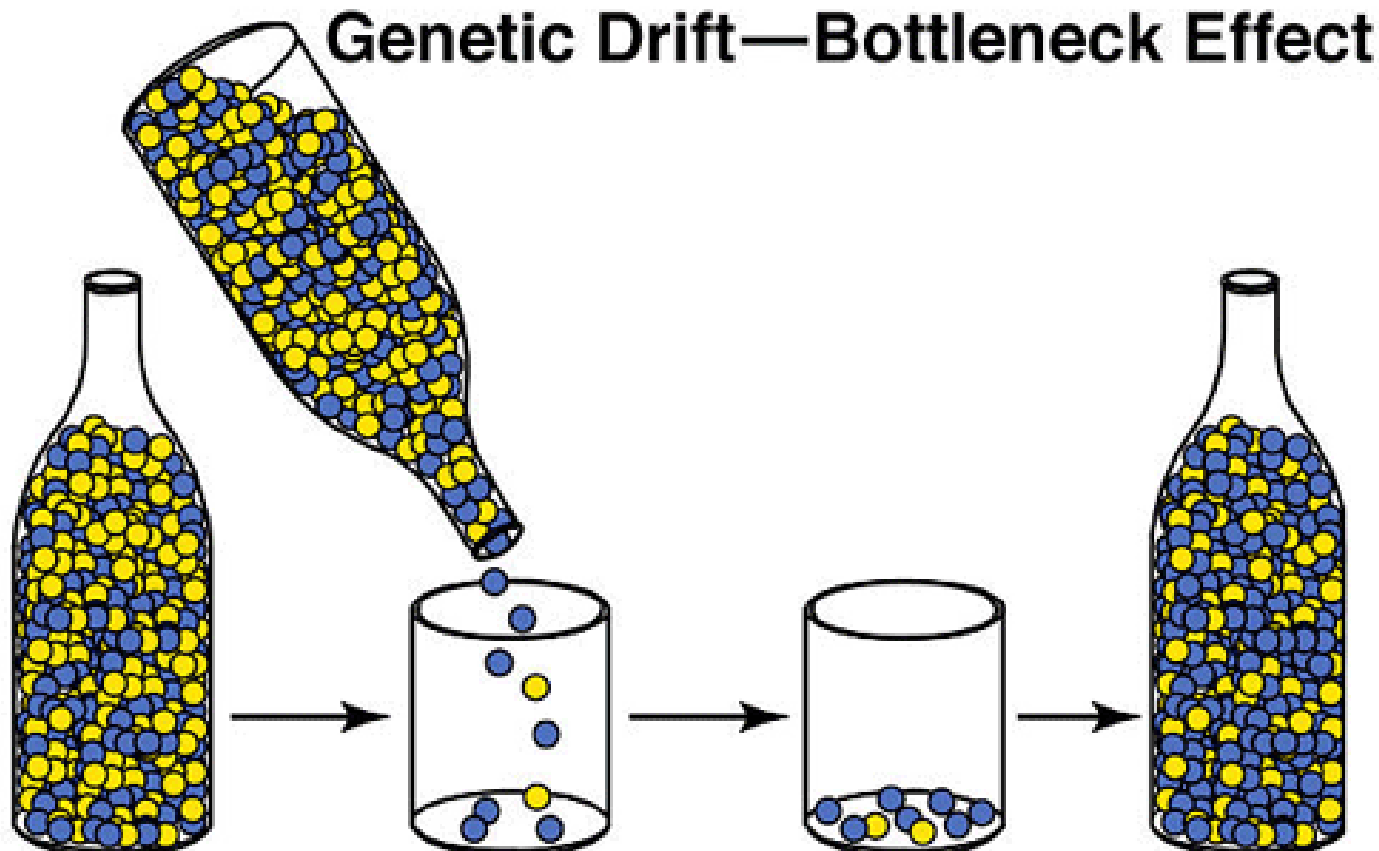
11 of 23: The wings of butterflies and birds are examples of \_\_\_\_\_ structures.



# 12 of 23: How is artificial selection different from natural selection? What is heritability?

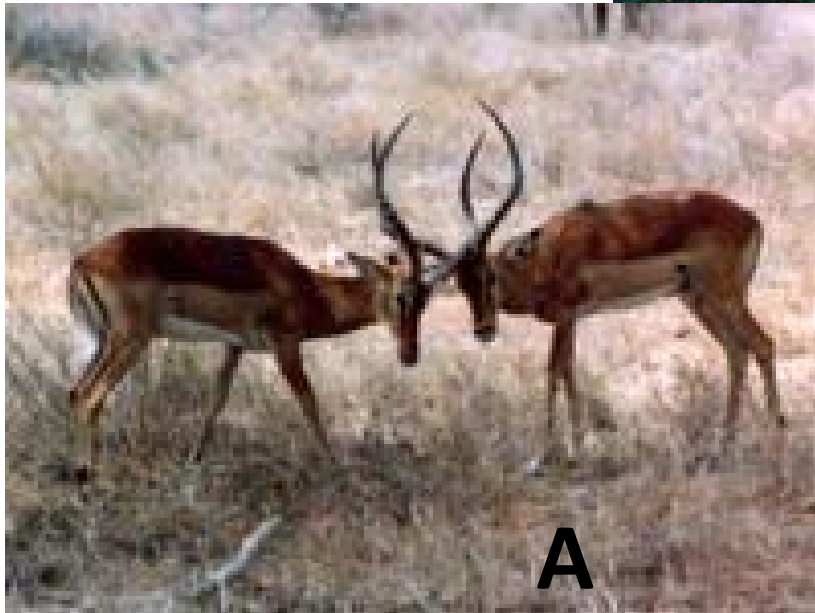


13 of 23: Explain the picture below.





14 of 23: There are **two** types of sexual selection. What are they and how do these pictures depict them?



15 of 23: What type of evolution is shown between these two closely related fox?

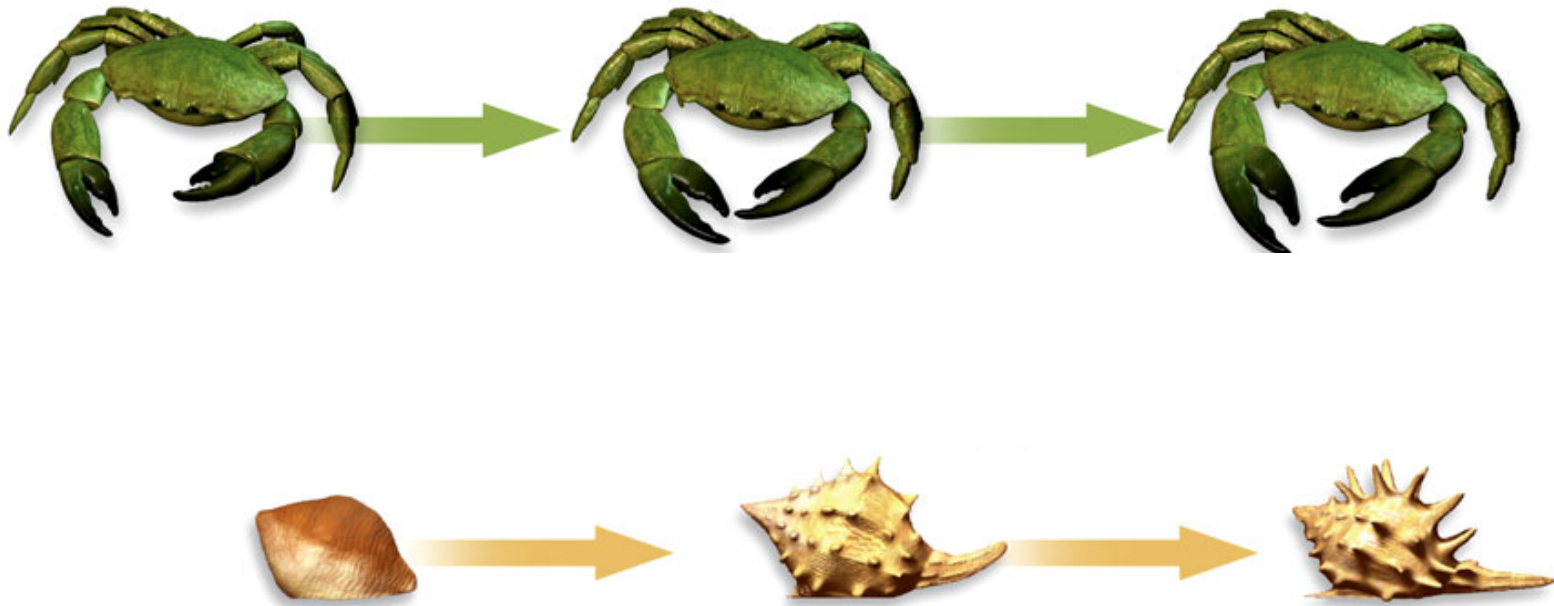


16 of 23: What type of evolution explains how these two different species evolved similar characteristics?

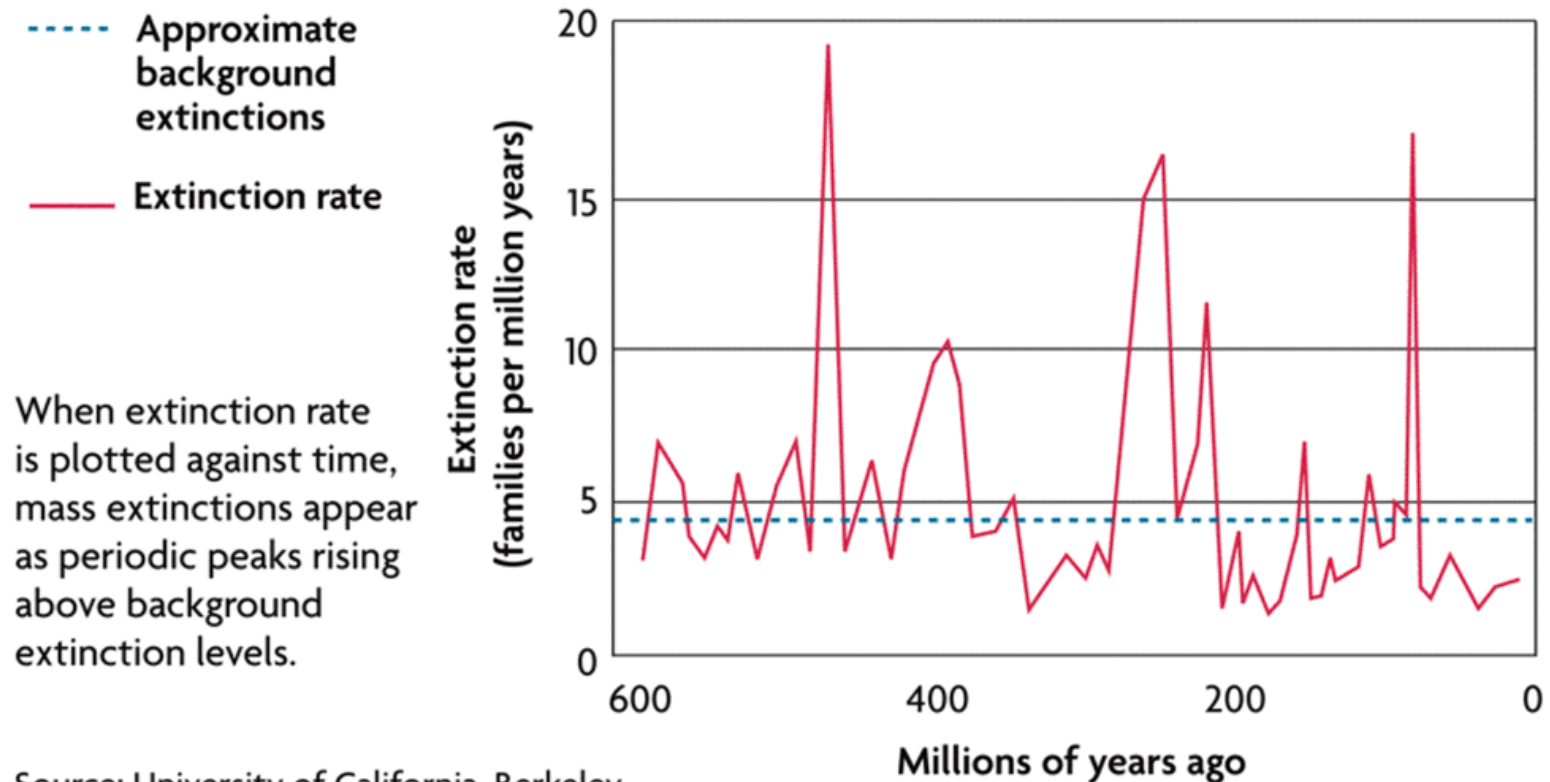




17 of 23: State this competitive relationship  
in terms of coevolution?

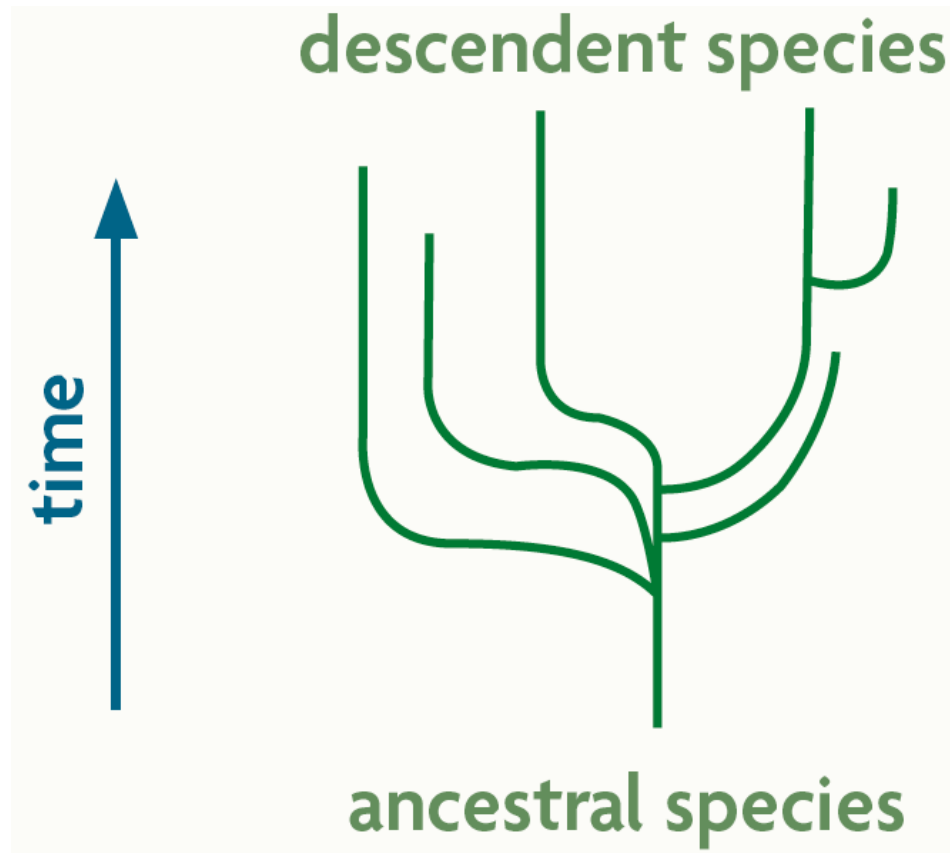


# 18 of 23: What are the differences between mass and background extinctions?



Source: University of California, Berkeley

19 of 23: What two terms explain what usually happens after a mass extinction, in terms of speciation?

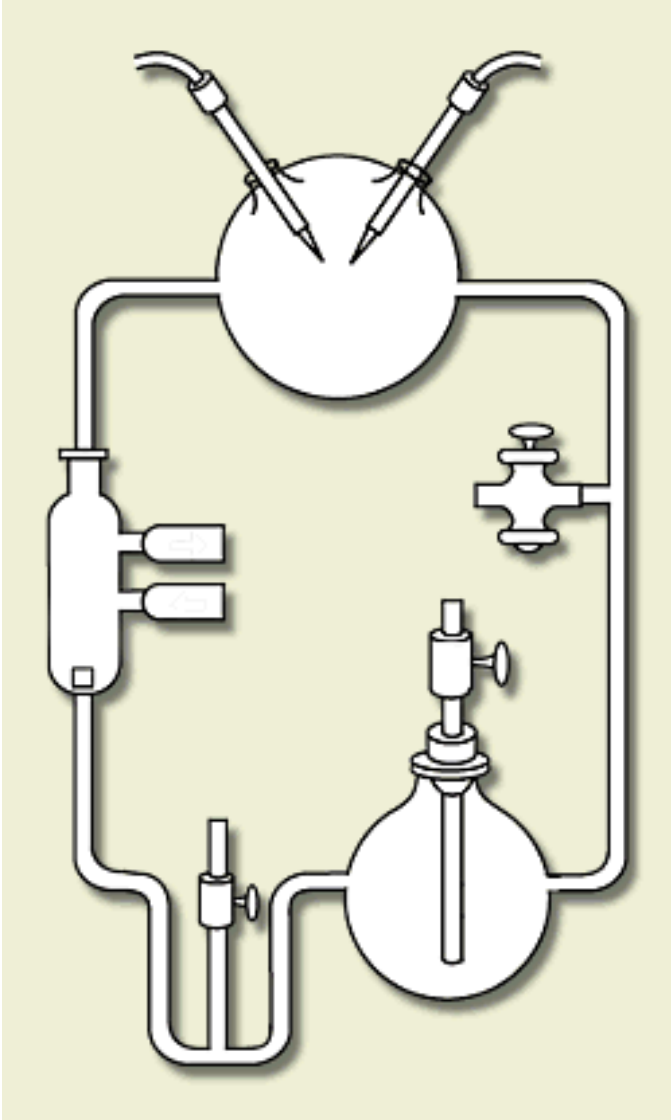




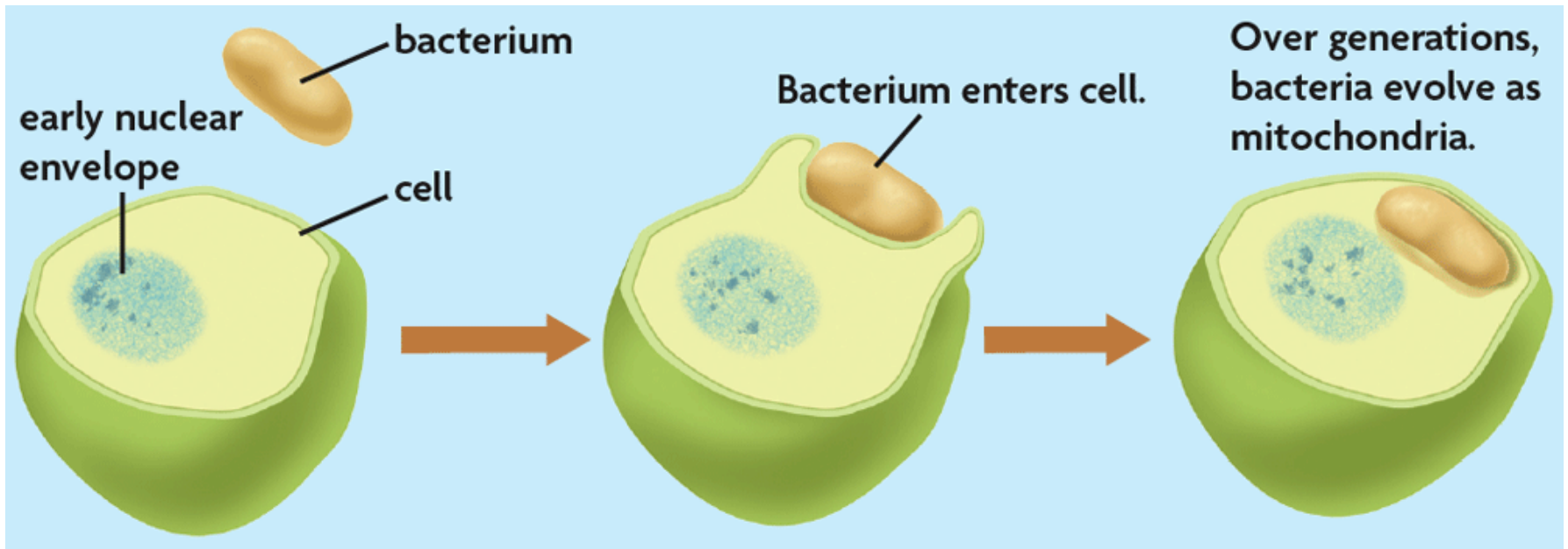
20 of 23: What are the main differences between relative dating and radiometric dating of fossils?



# 21 of 23: What did the Miller-Urey Experiment demonstrate?



22 of 23: \_\_\_\_\_ is a relationship in which one organism lives within the body of another. \_\_\_\_\_ and \_\_\_\_\_ may have developed through this process.



23 of 23: By looking at the DNA sequences below, would you say that the two species are closely related or not closely related? What type of evidence is this?

Hippopotamus	<b>TCC TGGCA GTCCA GTGGT</b>
<hr/>	
Humpback whale	<b>CCC TGGCA GTGCA GTGCT</b>

Exchange  
Your  
Answers

1 of 23: What is the term for a group of organisms that can reproduce and have fertile offspring?

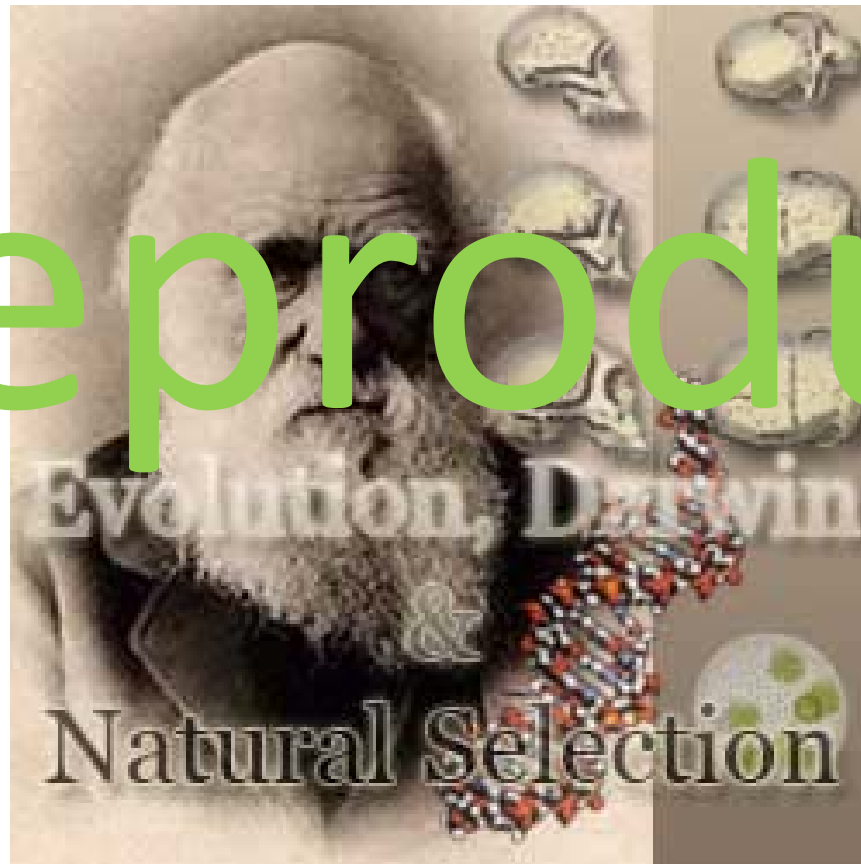
Species





2 of 23: As explained in the theory of evolution by natural selection, organisms with adaptations are more likely to survive and \_\_\_\_\_.

Reproduce



3 of 23: Darwin noticed that finches had different kinds of beaks in areas with different food sources. This would best explain what among individuals in a group of organisms?

Variation



(a)



(b)



(c)



(d)

4 of 23: The Galapagos tortoises with short necks and legs lived in areas of low vegetation, while the tortoises with long necks and legs lived in areas with tall plants. This is an example of...



What's up?

Adaptation

# 5 of 23) What are the 4 factors that led to the theory of natural selection?

- Variation

- \_\_\_\_\_

- Overpopulation/overproduction

- \_\_\_\_\_

- Adaptation

- \_\_\_\_\_

- Descent with Modification

- \_\_\_\_\_

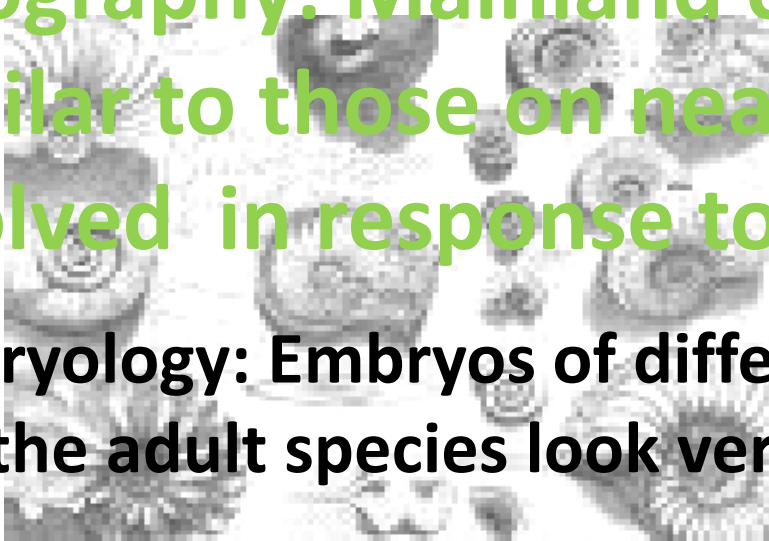
6 of 23: Evidence for evolution in Darwin's time came from several sources. Name and explain **one** of the four evidences.

**Fossils: Bottom layers = older, upper layers = younger**

**Geography: Mainland organisms look very similar to those on nearby islands. organisms evolved in response to their habitat.**

**Embryology: Embryos of different species look very similar, but the adult species look very different.**

**Anatomy: Comparing body parts of different species.**



7 of 23) When do these different species look most similar? What type of evidence is this?



As embryos.

Embryological

Evidence.



8 of 23) Place the fossils in order of oldest to youngest.

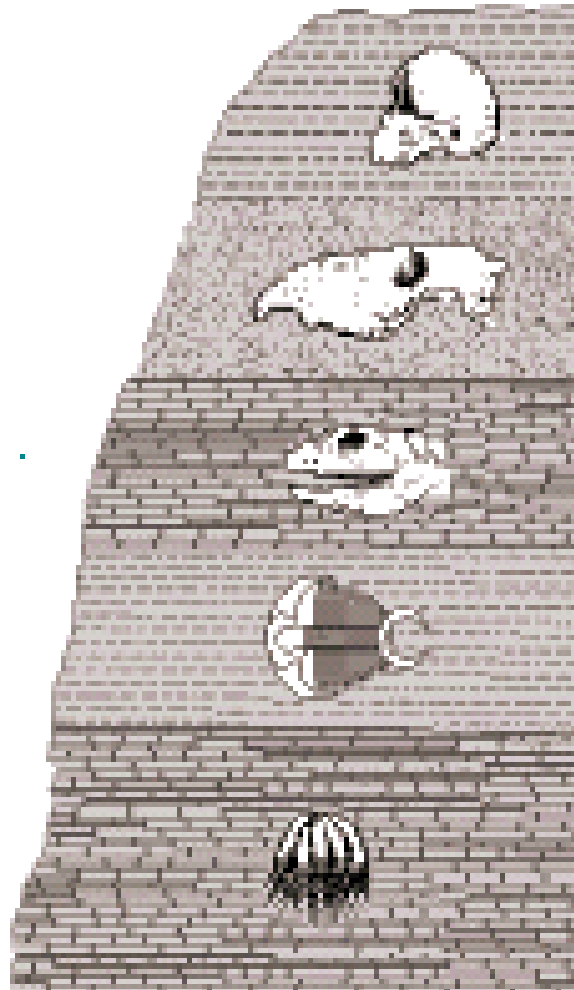
C

B

E

D

A



a

d

e

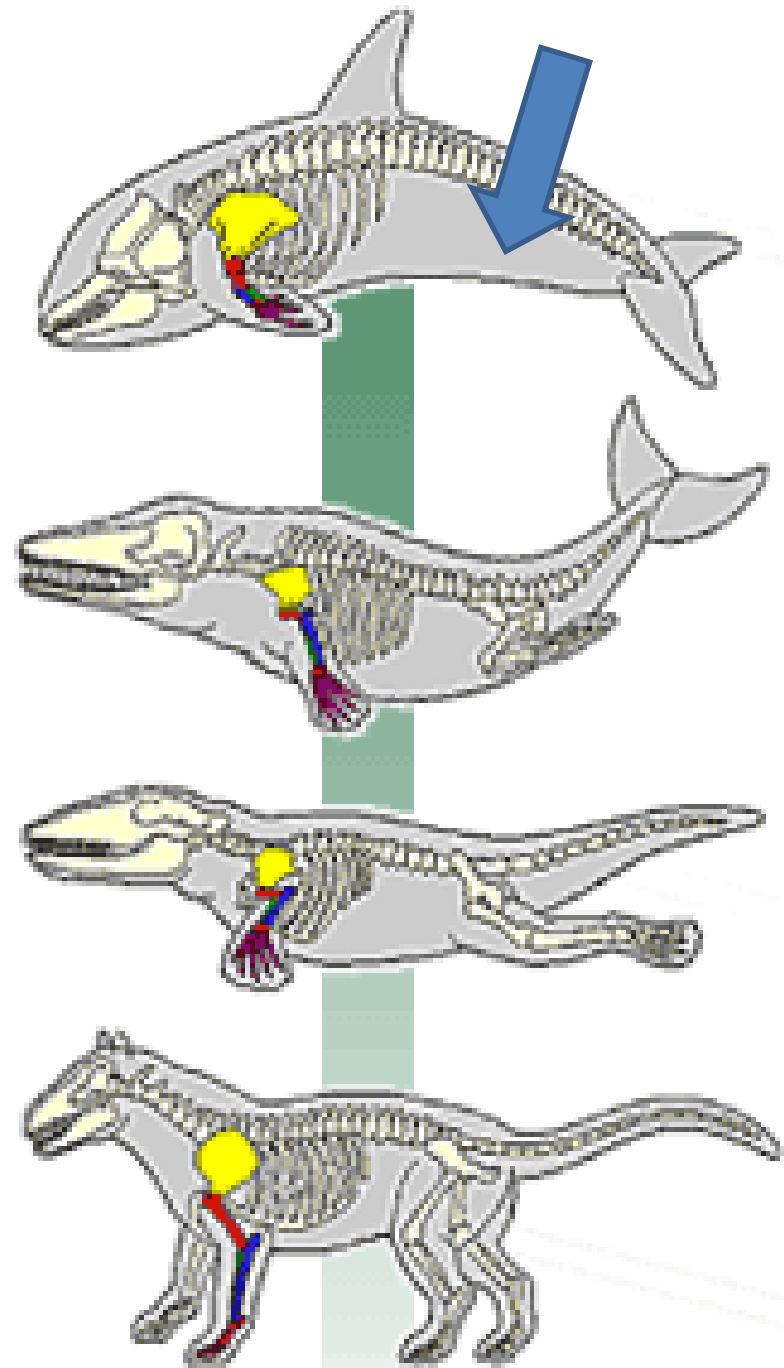
b

c



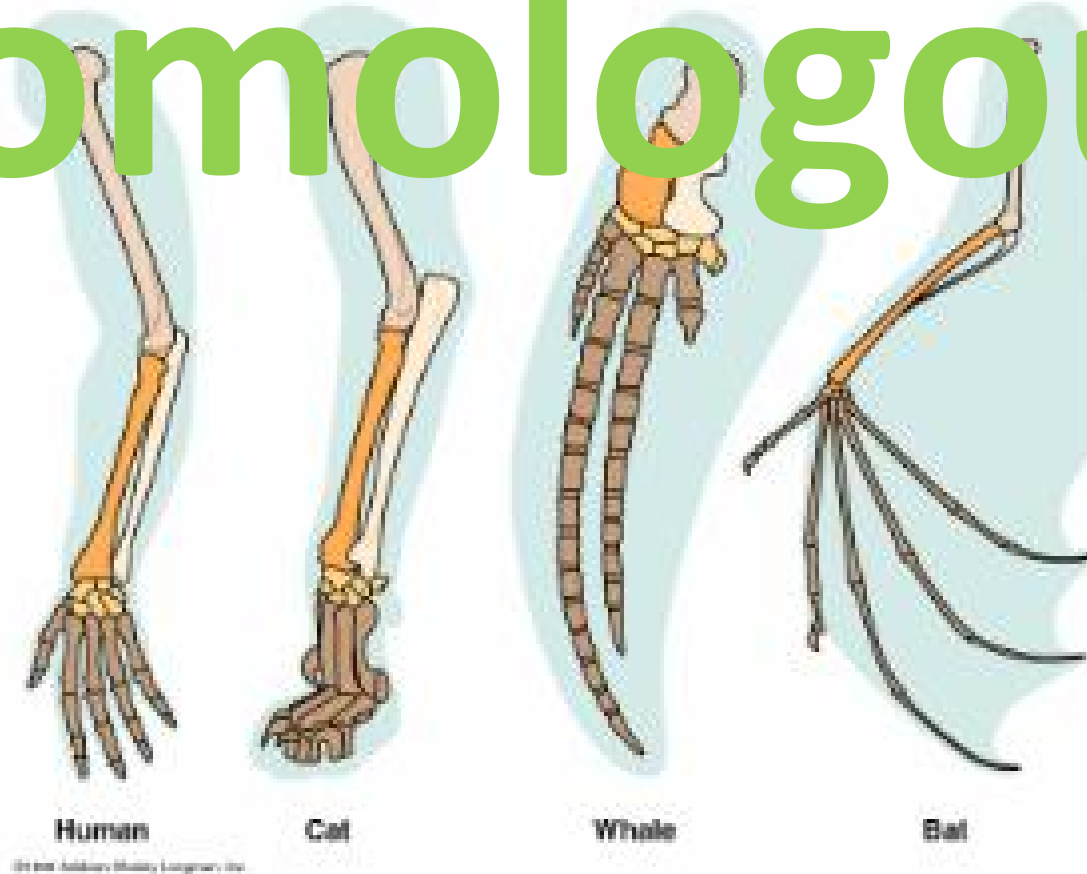
9 of 23) The top picture is showing what type of structures? What is another example of this?

Vestigial Structures  
Wisdom Teeth  
Appendix  
Ostrich wings



10 of 23: These are examples of  
\_\_\_\_\_ structures.

# Homologous



11 of 23: The wings of butterflies and birds are examples of \_\_\_\_\_ structures.

Analogous



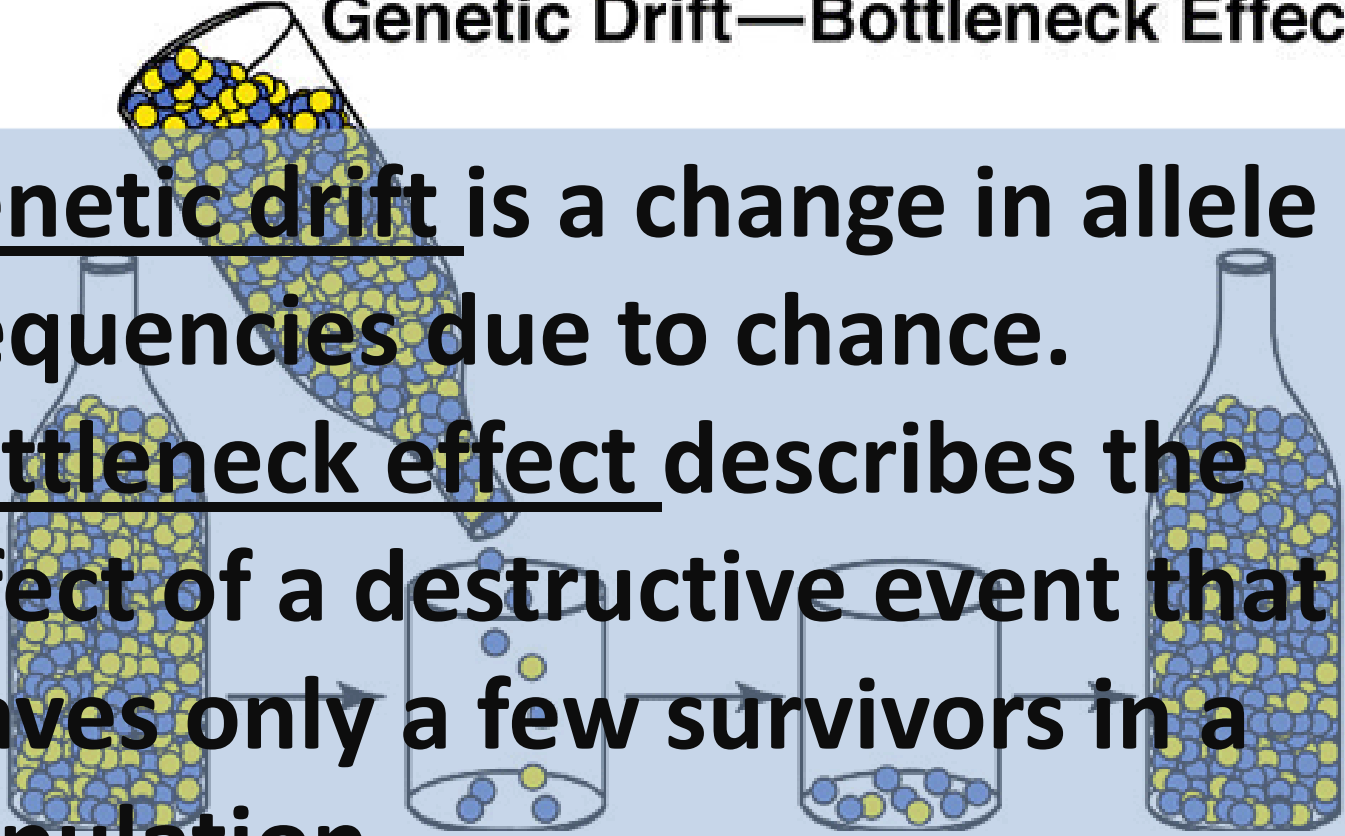
12 of 23 What are the differences between artificial selection, heritability, and natural selection?

**Artificial selection is where HUMANS breed for certain traits. Natural selection is where nature is the selective agent. Heritability is the ability of traits to be passed down.**

# 13 of 23: Explain the picture below.

## Genetic Drift—Bottleneck Effect

Genetic drift is a change in allele frequencies due to chance. Bottleneck effect describes the effect of a destructive event that leaves only a few survivors in a population.

The diagram illustrates the bottleneck effect using a sequence of four glass containers. The first container on the left is a bottle filled with a mixture of blue and yellow beads. An arrow points from this bottle to a second, wider container that is only partially filled with a few beads. A third, similar wide container follows, also containing a small number of beads. An arrow points from the third container to the final container on the right, which is a bottle again filled with a mixture of blue and yellow beads. This visualizes how a small, random sample of the original population's genetic diversity can survive a bottleneck and then repopulate the area.

14 of 23: There are **two** types of sexual selection. What are they and how do these pictures depict them?



Intersexual- males display for the females



15 of 23: What type of evolution is shown between these two closely related fox?

## Divergent Evolution



(common ancestor, but adapted to different environments)



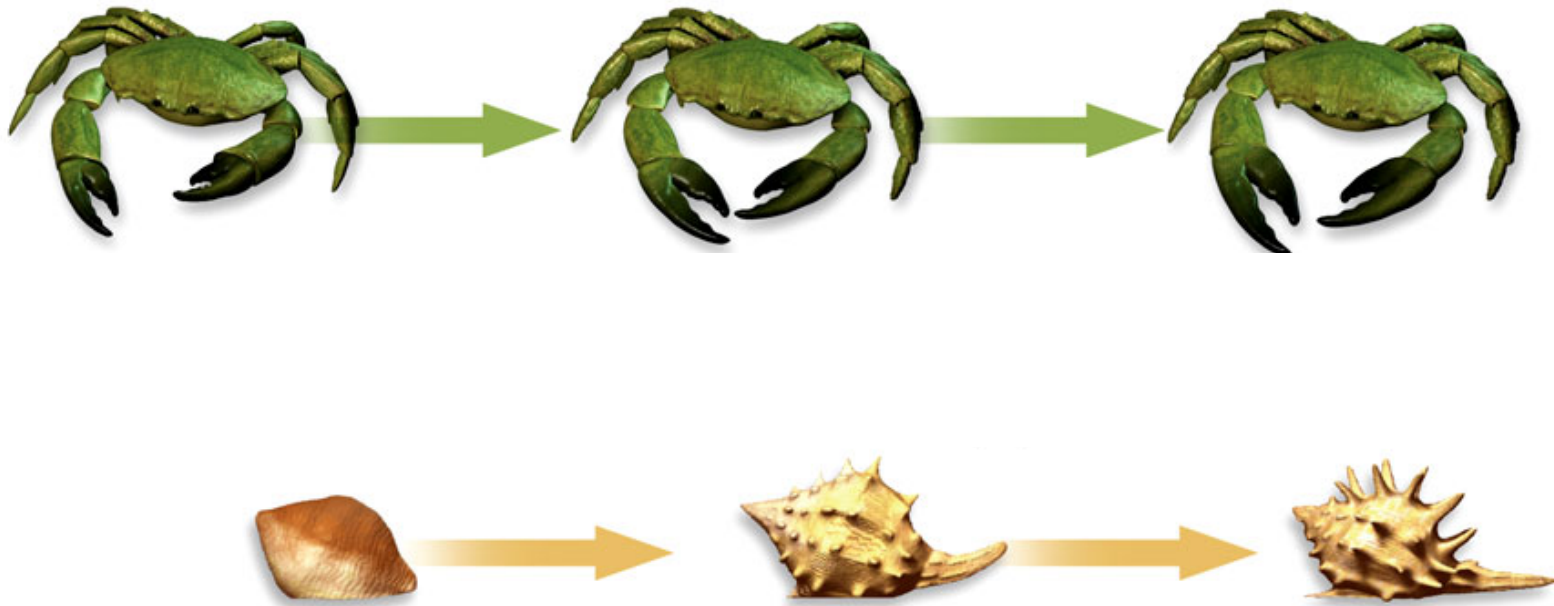
16 of 23: How could these two different species evolve similar characteristics?

**CONVERGENT** (not closely related, but similar traits due to similar environment)



17 of 23: Explain this competitive relationship in terms of coevolution?

## Evolutionary arms race

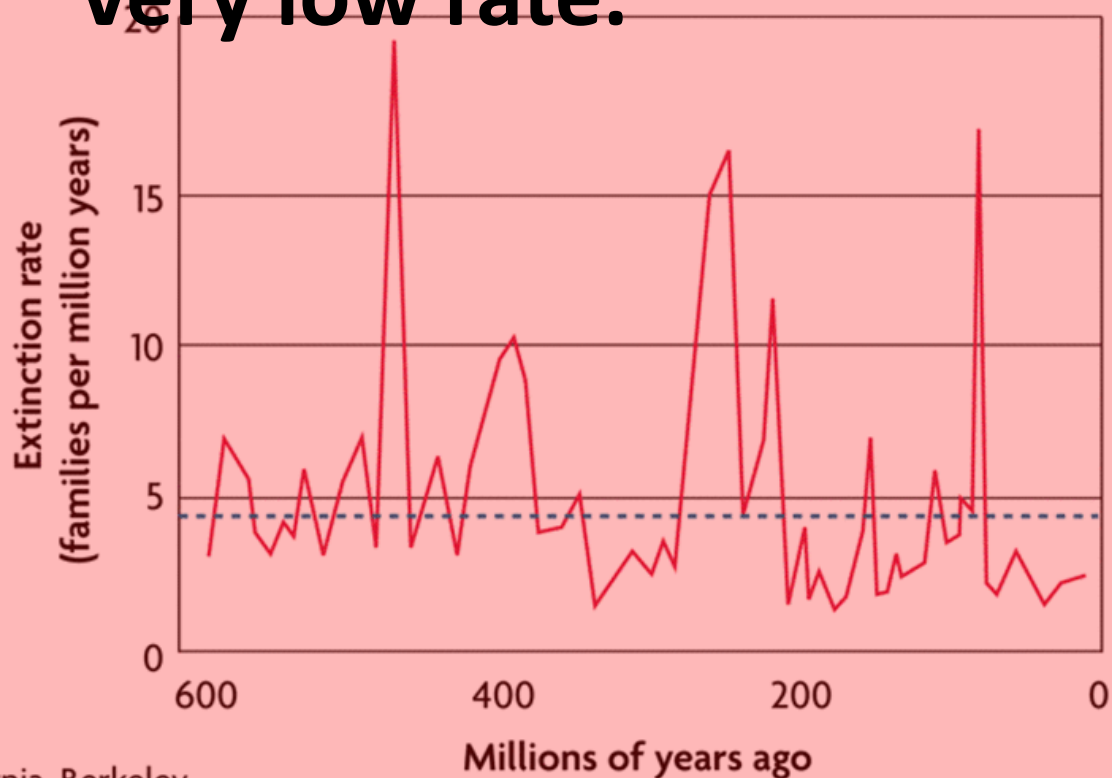


# 18 of 23: What are the differences between mass and background extinctions?

**Background- occur continuously, but at a very low rate.**

----- Approximate background extinctions  
— Extinction rate

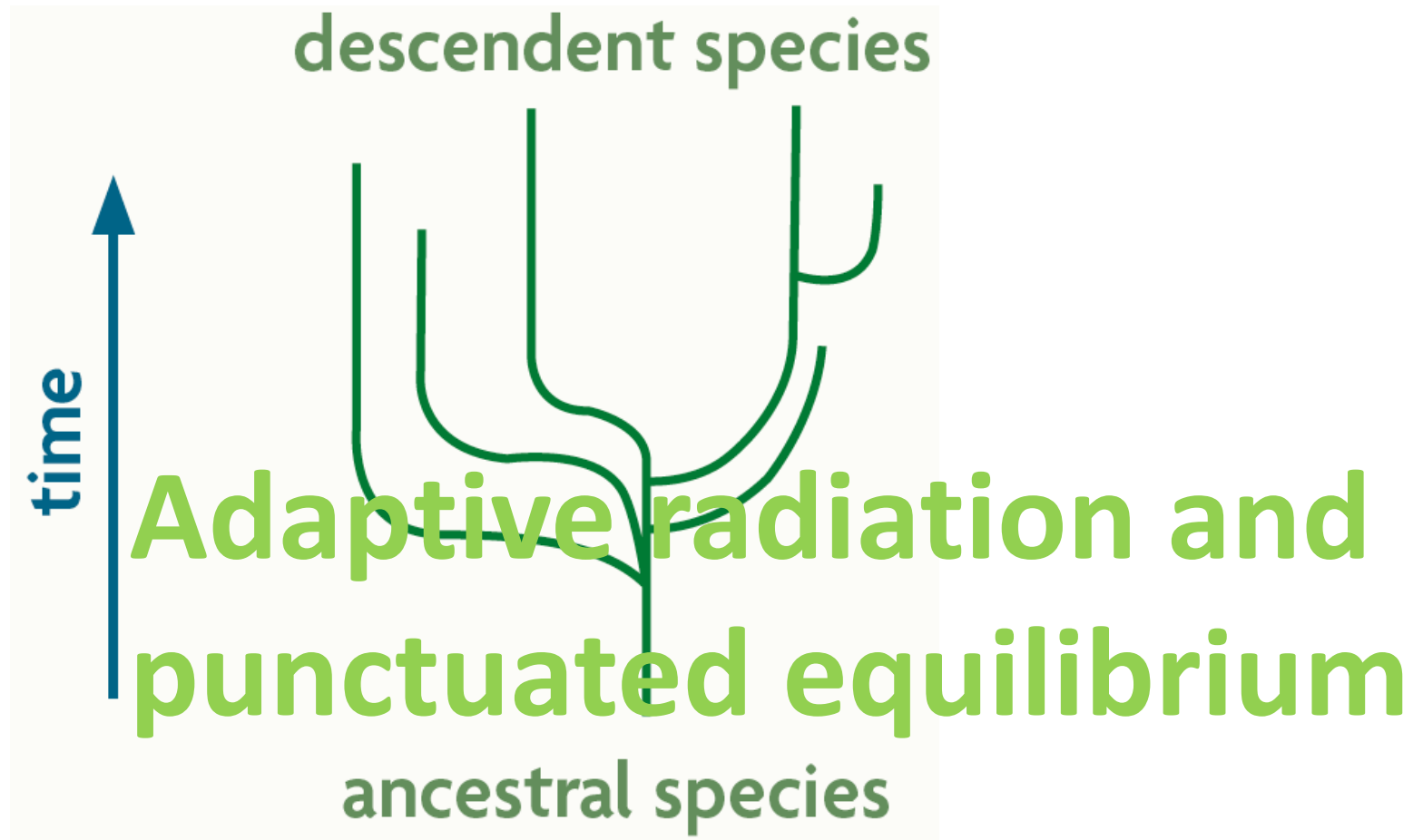
When extinction rate is plotted against time, mass extinctions appear as periodic peaks rising above background extinction levels.



Source: University of California, Berkeley

**Mass- more rare, but much more intense.**

19 of 23: What usually happens after a mass extinction?



20 of 23: What are the main differences between relative dating and radiometric dating of fossils?

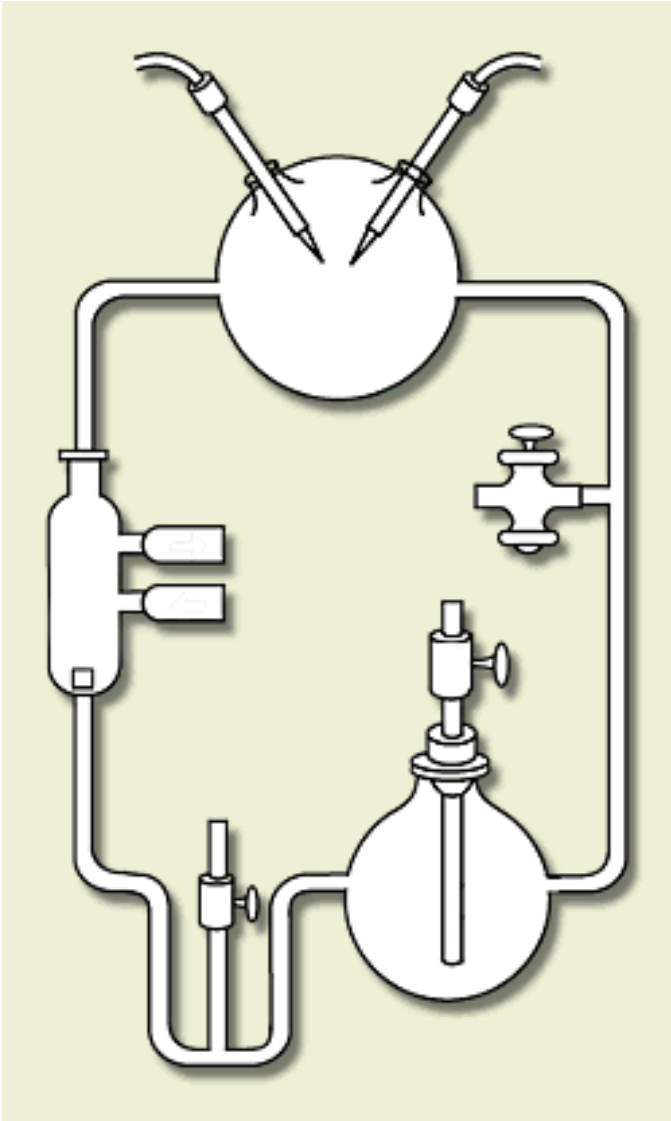
**Relative- estimates by comparing placement of fossils**



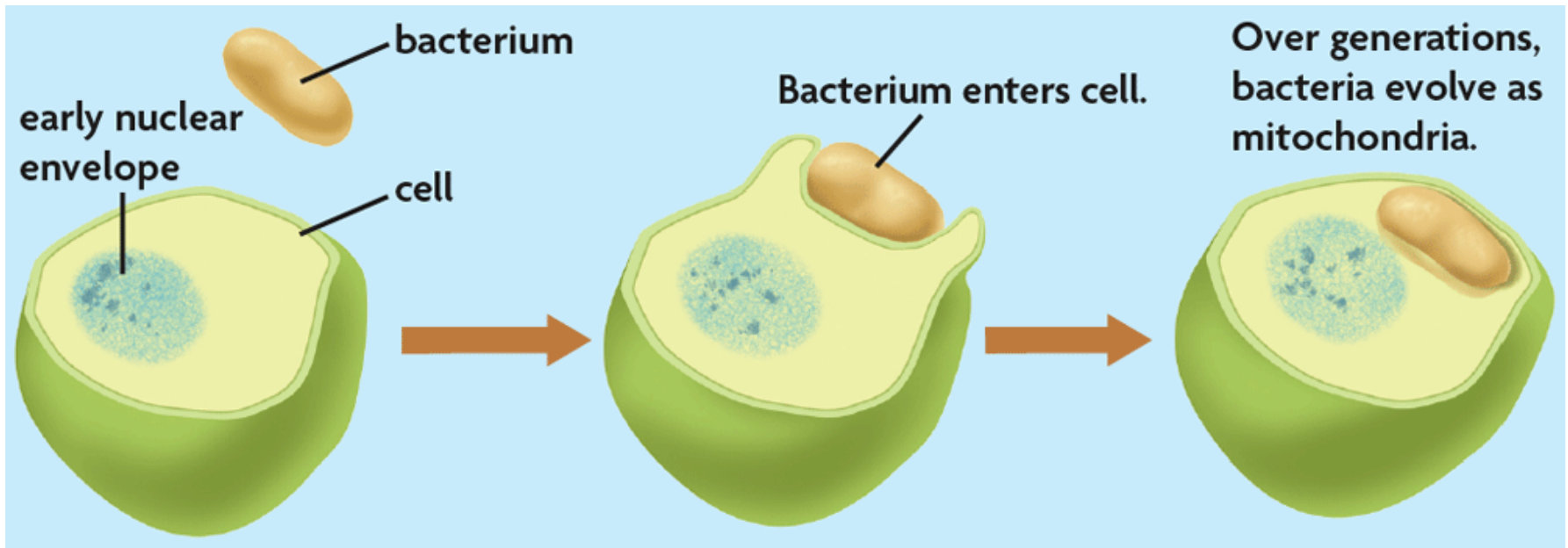
**Radiometric- uses half-life, or isotopes, for a more accurate age**

# 21 of 23: The Miller-Urey Experiment demonstrated?

Used to represent the conditions of early earth- demonstrated that organic molecules can be made from inorganic molecules.



22 of 23: Endosymbiosis is a relationship in which one organism lives within the body of another. Mitochondria and chloroplasts may have developed through this process.





23 of 23: By looking at the DNA sequences below, would you say that the two species are closely related or not closely related? What type of evidence is this?

**Closely related!**  
**Molecular evidence!**

Hippopotamus	<b>TCC TGGCA GTCCA GTGGT</b>
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Humpback whale	<b>CCC TGGCA GTGCA GTGCT</b>
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